

WHAT IS CLAIMED IS:

1. A pattern inspection method comprising:

acquiring difference data by subtracting a real  
pattern window having real pattern data corresponding  
to predetermined pixels of the real pattern data  
obtained by imaging an inspection object from a design  
pattern window corresponding to the real pattern window  
and shift design pattern windows which are obtained by  
shifting the design pattern windows in a plurality of  
directions, respectively;

selecting one window from the design pattern  
window and shift design pattern windows such that the  
selected one window has a minimum difference data; and

performing a pattern inspection of the inspection  
object based on a difference value between the selected  
one window and the real pattern window.

2. The pattern inspection method according to  
claim 1,

wherein the acquiring step, selecting step and  
performing step are repeatedly executed with respect to  
all pixels of the real pattern data.

3. The pattern inspection method according to  
claim 1,

wherein the plurality of directions are eight  
directions of 0°, 45°, 90°, 135°, 180°, 225°, 270°,  
315° with respect to a noticed pixel of said real  
pattern window.

[illegible]

Sub

5

10

15

20

25

wherein the performing step comprises:

outputting 1) a "0" difference value in a case where the obtained difference value is within a

005-2900-0200

20

wherein the difference value is determined based on a lightness of pixels in the real pattern data and a lightness of pixels in the design pattern data.

means for acquiring difference data by subtracting  
a real pattern window having real pattern data  
corresponding to predetermined pixels of the real  
25 pattern data obtained by imaging an inspection object  
from a design pattern window corresponding to the real  
pattern window and shift design pattern windows which

are obtained by shifting the design pattern windows in a plurality of directions, respectively;

means for selecting one window from the design pattern window and shift design pattern windows such that the selected one window has a minimum difference data; and

means for performing a pattern inspection of the inspection object based on a difference value between the selected one window and the real pattern window.

9. The pattern inspection device according to claim 8,

wherein the acquisition of the difference data by the means for acquiring, selection of the selected on window by the means for selecting and pattern inspection performed by the means for performing are repeatedly executed with respect to all pixels of the real pattern data.

10. The pattern inspection device according to claim 8,

wherein the plurality of directions are eight directions of 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° with respect to a noticed pixel of said real pattern window.

11. The pattern inspection device according to claim 8,

wherein the performing step comprises:

means for selecting a central pixel of the

[illegible]

201

10

15

20

25

outputting 1) a "0" difference value in a case where the obtained difference value is within a difference value obtained by shifting the design pattern window by one pixel or less, 2) a difference value obtained by subtracting the minimum value from

the obtained difference value in a case where the  
obtained difference value is less than a minimum value  
of difference values obtained by shifting the design  
pattern window and 3) a difference value obtained by  
5 subtracting a maximum value of difference values which  
are obtained by shifting the design pattern window by  
one pixel or less from the obtained difference value in  
a case where the obtained difference value is larger  
than the maximum value, and

10 performing the pattern inspection of the  
inspection object by comparing the outputted difference  
value with a threshold value set in advance.

14. The pattern inspection device according to  
claim 8,

15 wherein the difference value is determined based  
on a lightness of pixels in the real pattern data and a  
lightness of pixels in the design pattern data.

15. A method of manufacturing a mask comprising:  
preparing a substrate with a light shielding film  
on which a mask pattern is formed; and

20 inspecting the substrate with the light shielding  
film on which a mask pattern is formed,

wherein the inspecting step comprises:

25 acquiring difference data by subtracting a real  
pattern window having real pattern data corresponding  
to predetermined pixels of the real pattern data  
obtained by imaging the mask pattern from a design

5            selecting one window from the design pattern  
window and shift design pattern windows such that the  
selected one window has a minimum difference data; and  
         performing a pattern inspection of the mask  
pattern based on a difference value between the  
0            selected one window and the real pattern window.

16. The method according to claim 15,

wherein the acquiring step, selecting step and performing step are repeatedly executed with respect to all pixels of the real pattern data.

15                    17. The method according to claim 15,

wherein the plurality of directions are eight directions of 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° with respect to a noticed pixel of said real pattern window.

20            18. The method according to claim 15,

wherein the performing step comprises:

```

        selecting a central pixel of the selected one
window,

```

obtaining a difference value between the selected  
25 central pixel and a central pixel of the window of said  
real pattern data, and

determining a defect of the mask pattern by

*[Signature]*

5

20. The method according to claim 15,

10

15

20

25



